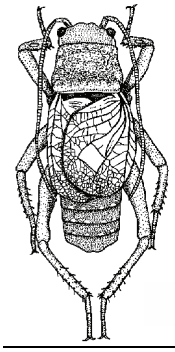

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AN ANNOTATED CHECK-LIST OF ORTHOPTERA OF TUVA AND ADJACENT REGIONS. PART 1. SUBORDER ENSIFERA

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Summary. The first annotated checklist of the long-horned Orthoptera (Ensifera) of Tuva and adjacent territories is presented. This list is based on numerous published and unpublished data. A total of 22 species belonging to 2 families, namely Tettigoniidae and Gryllidae, are known as occurring in Tuva. Six species are recorded from the region for the first time, namely *Tettigonia cantans* (Fuessly), *Platycleis albopunctata* (Goeze), *Platycleis affinis* Fieber (also new for the Asian part of Russia), *Roeseliana fedtschenkoi* (Saussure), *Poecilimon intermedius* (Fieber), *Acheta domesticus* (Linnaeus) (synanthrope). *Montana tomini* (Pylnov) is also mentioned for the southern part of Krasnoyarsk Region for the first time. Six species are known from the adjacent areas and listed as probably occurring in the region.

Key words: Orthoptera, Ensifera, Tettigoniidae, Gryllidae, fauna, new record, Siberia, Russia.

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Резюме. Впервые приведен аннотированный список длинноусых прямокрылых Тувы и сопредельных регионов. В его основу положены многочисленные опубликованные и неопубликованные данные. К настоящему времени для Тувы известны находки 22 видов длинноусых прямокрылых из двух семейств: Tettigoniidae и Gryllidae. Из них впервые для Тувы приводятся 6 видов: *Tettigonia cantans* (Fuessly), *Platycleis albopunctata* (Goeze), *Platycleis affinis* Fieber (первая находка в азиатской части России), *Roeseliana fedtschenkoi* (Saussure), *Poecilimon intermedius* (Fieber), *Acheta domesticus* (Linnaeus) (синантропный вид). *Montana tomini* (Pylnov) впервые приведен для южной части Красноярского края. Вполне возможно обнаружение в Туве еще 6 видов, известных из сопредельных регионов.

INTRODUCTION

Tuva (officially the Tyva Republic) is a geographic region in the central part of the Altay-Sayan Mts. This region is commonly characterized by an extreme continental semi-arid climate with a relatively long and cold winter and a short and warm (sometimes hot) summer. The main part of precipitation occurs usually in the second half of a summer and in the beginning of an autumn. This results in a fast growth of grasses and forbs in the end of a summer and in congruent development of local orthopteran species, because almost all of them begin to emerge in the first half of a summer and to mature in the second one.

Geographically the region is rather complicated, because there are both numerous mountain ranges and many intermountain basins, or depressions. The mountain ranges divide this region into intermountain basins of different types and sizes. The complicated systems of altitudinal belts are developed. The deserts of the Mongolian type occupy the lower parts of intermountain basins in the southern and central parts of Tuva. The different steppes are usually distributed over the low and middle altitudinal belts, especially over the southern slopes. Some huge areas on the north and north-east are occupied by the forests, mainly coniferous. The northern slopes of the almost all ranges are also covered by the coniferous forests. The mountain tundra and alpine meadows are common over the upper altitudinal belts above the local timber-lines. This results in the significant diversity of local ecosystems and in the relatively high level of ortopteran diversity.

The first data about Orthoptera of Tuva and adjacent regions have been published in the beginning of the 20th century (Miram, 1907). Her list includes 10 species of Orthoptera from the area. However, the main part of data concerning the orthopteran insects, their diversity, distribution and ecology, has been obtained after the Second

World War. The first, relatively comprehensive annotated list of Caelifera has been published by R.P. Berezhkov (1951). A.I. Cherepanov (1951) has simultaneously characterized distribution patterns and some ecological peculiarities of two katydid species, namely *Zichya baranovi* (Bey-Bienko) and *Deracanthina deracanthoides* (Bey-Bienko). In the 1960s and 1970s, diversity, distribution, ecology and behavior of the orthopteran insects of Tuva have been studied by the several expeditions of Biological Institute of Siberian Branch of the Russian Academy of Sciences (Novosibirsk, now – Institute of Systematics and Ecology of Animals) and Novosibirsk State University under the leadership of I.V. Stebaev (Fig. 1). The expeditions collected a lot of original data, but their main part was not analyzed and published up to date. These field studies have been continued in the 1980s and 1990s. Besides, almost all these studies were spatially limited by Uvs-Nuur and Ulug-Khem Intermountain Basins (Stebaev, 1968; Kazakova & Sergeev, 1993; Stebaev *et al.*, 2001). From 1997

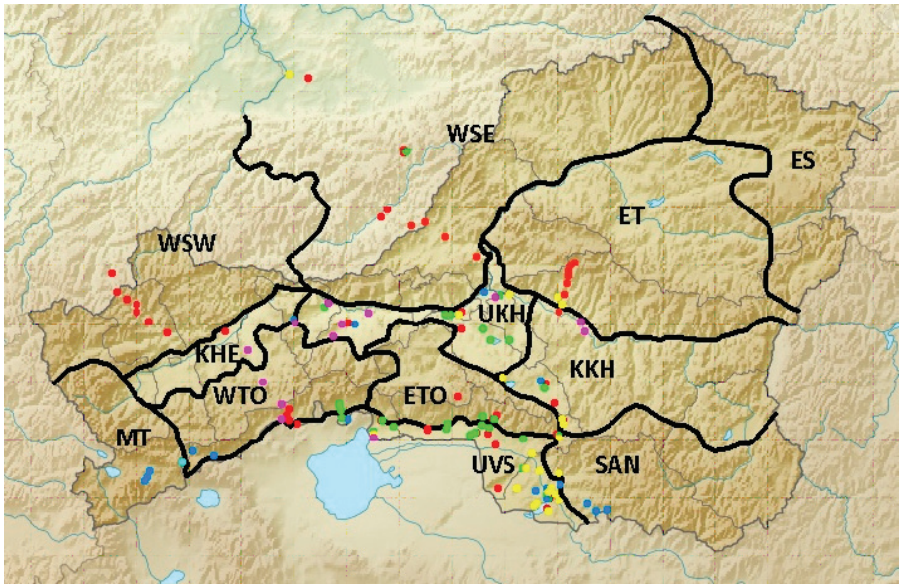

Fig. 1. The main geographical parts of Tuva and adjacent areas (mainly based on Nosin, 1963) and distribution of main localities of Orthoptera sampling: **WSW** – western and **WSE** eastern parts of the West Sayan Mts.; **ES** – East Sayan Mts.; **MT** – Mongun-Taiga mountain region; **KHE** – Khemchik Intermountain Basin; **UKH** – Ulug-Khem Intermountain Basin; **ET** – Eastern Tuva region (Academician Obruchev Range and Todzha Basin); **KKH** – Kaa-Khem mountain region; **WTO** – West Tannu-Ola Mts.; **ETO** – East Tannu-Ola Mts.; **UVS** – Uvs-Nuur Intermountain Basin; **SAN** – Sangilen Mts. Points of sampling: rose – field trips of Biological Institute (1947–1949); green – I.V. Stebaev with colleagues (1960–1986); red – M.G. Sergeev with colleagues (1978–2018); blue – A.A. Benediktov (1993–1995); light blue – A.V. Bondarenko (Gorno-Altaisk State University, 2006); yellow – S.Yu. Storozhenko with colleagues (Federal Scientific Center of the East Asia Terrestrial Biodiversity, 2013–2014).

until 2018 the several joint expeditions of Novosibirsk State University and the Institute of the Systematics and Ecology of Animals have been organized by M.G. Sergeev. They worked in different parts of Tuva and in adjacent areas. During last decades several field trips to the region were also organized by entomologists of Moscow State University and the Institute of Biology and Soil Science (Vladivostok) (now – Federal Scientific Center of the East Asia Terrestrial Biodiversity). Some samples of Orthoptera (mainly grasshoppers) were collected by researchers of Tuvinian Institute for Exploration of Natural Resources too.

Data obtained during last decades allow us to discuss general patterns of orthopteran biological diversity and species distribution relative to complicated geography of Tuva. This paper deals with general characteristic of the regional fauna of Orthoptera and is organized as an annotated checklist of species of Tuva and adjacent regions. Its first part is about the suborder Ensifera, or long-horned Orthoptera.

MATERIAL AND METHODS

Original data were collected by both different qualitative and quantitative sampling methods from 1978 until 2018. The peculiarities of orthopteran ecological distribution were characterized by quantitative samples collected in natural and transformed ecosystems. Samples captured during a fixed period of time were made in every habitat investigated (Gause, 1930; Sergeev, 1986, 2011).Using this method, insects were caught with a standard net over a period of 10–30 minutes. Results for every habitat were recalculated for an hour.

Some old materials, mainly from the field trips of Novosibirsk State University of 1960, 1962 and 1971, were also used, but we tried to check previous identifications. In 1978, 2015 and 2018, we specially studied altitudinal distribution of Orthoptera over elevation levels. We used the GPS navigators to determine geographical coordinates and altitudes. For localities studied before 2003 we used Google Earth Pro© to get the same parameters. Besides the species found in Tuva, we also analyzed data for the southern parts of the Republic of Khakassia and Krasnoyarsk Region, for easternmost parts of the Altay Mts., the East Sayan Mts. in the Republic of Buryatia, and the Mongolian part of Uvs-Nuur Intermountain Basin.

Insect songs were recorded in gauze cages under a lamp with condenser microphone MKE-9 (upper frequency limit 18 kHz) and cassette recorder Proton-402 (upper frequency limit 12.5 kHz). Air temperature was +27 °C and measured during recording on the place where the singing insect was sitting.

The terminology as well as its interpretation in connection with the wing–movements of the singer follow Ragge & Reynolds (1998) and Oliveira *et al.* (2001): (1) calling song, the song produced by an isolated male; (2) syllable, the sound produced by the opening stroke followed by the closing stroke of the tegmina; (3) the longer syllable are termed macrosyllables and the shorter ones, which usually last less than 10 ms, are the microsyllables; (4) echeme, a first–order assemblage of syllables.

The main part of studied specimens is in the collections of Novosibirsk State University, Institute of Systematics and Ecology of Animals (Novosibirsk), Federal Scientific Center of the East Asia Terrestrial Biodiversity (Vladivostok), and Moscow State University.

LIST OF THE SPECIES

Sixteen species of Ensifera has been recorded from Tuva (Cherepanov, 1951; Stebaev, 1964, 1980; Sergeev, 1985; Sergeev & Bugrov, 1988; Kazakova & Sergeev, 1993; Sergeev *et al.*, 1995; Benediktov, 1997; Ivković *et al.*, 2017; Sergeev & Storozhenko, 2018). The list of 28 species of Tettigoniidae and Gryllidae of the Tyva Republic and adjacent regions is given below. All species known from Tuva are numbered. An asterisk (*) is used to mark new species for Tuva, two asterisks (**) – for Krasnoyarsk Region. Abbreviations of the main geographical parts of Tuva are given in Fig. 1. We have used the following abbreviations for collectors: IS – I.V. Stebaev, MS – M.G. Sergeev, SS – S.Yu. Storozhenko.

SUBORDER ENSIFERA

FAMILY TETTIGONIIDAE

Subfamily Tettigoninae

Tribe Tettigoniini

Genus *Tettigonia* Linnaeus, 1758

1. ***Tettigonia viridissima*** **(Linnaeus, 1758)**

Tettigonia viridissima: Sergeev, 1986: 178; Benediktov, 1997: 118; Storozhenko, 2004: 89.

MATERIAL. **Tuva**: Kyzyl City, Kaa (Malyj Yenissei) River, City Park, flood-plain, 12.VIII 1993, 1 ♂ (Benediktov).

REMARKS. Occurrence of this species in Tuva requires confirmation because the male examined was lost. Benediktov (1997) also mentioned that this species had been registered from Tuva for the first time by Kazakova & Sergeev (1993). However, these authors mentioned it only to exemplify the species associated with northern slopes of mountain ranges of Southern Siberia. There were no exact indications about presence of *T. viridissima* in Uvs-Nuur Intermountain Basin.

DISTRIBUTION. **Tuva**: UKH. – Europe (except the North), South Siberia, N Africa, SW Asia, the Caucasus, Kazakhstan, Middle Asia, Afghanistan, N India, NW China, Mongolia.

ECOLOGY. In the Altay-Sayan Mts., the species is commonly associated with tall forbs meadows and bushes on clearings and openings, often together with *T. caudata.*

Tettigonia caudata **(Charpentier, 1845)**

Tettigonia caudata: Sergeev, 1986: 178; Storozhenko, 2004: 92.

DISTRIBUTION. Europe (except the North), South Siberia, SW Asia, Caucasus, Kazakhstan, Middle Asia, Afghanistan, N India, NW China, Mongolia. This species was recorded from southeastern part of the Republic of Khakassia (Miram, 1907; Ivanova, 1967).

ECOLOGY. In the Altay-Sayan Mts., the species is commonly associated with tall forbs meadows and bushes, often together with *T. viridissima.*

2*. ***Tettigonia cantans*** **(Fuessly, 1775)**

Tettigonia cantans: Sergeev, 1986: 178; Storozhenko, 2004: 93.

MATERIAL. **Tuva**: Uvs-Nuur Intermountain Basin, S Tore Lake, 50°01′N, 95°03′N, 1154 m, 07.VII 2017, meadow terrace with birch forest, singing ♂♂ (MS). **Krasnoyarsk Region**: Oya River, near Ermakovskoje settlement, 53°16′N, 92°26′E, 291 m, pine forest, ride with tall meadow vegetation, 17.VII 1995, several specimens (MS).

REMARKS. At least several males sang on birch trees on the southern coast of Tore Lake near the state boundary of Russia and Mongolia.

DISTRIBUTION. **Tuva**: UVS. – Europe (except the North), South Siberia, N Africa, the Caucasus, Kazakhstan, Mongolia. This species was recorded from the southeastern part of the Republic of Khakassia (Miram, 1907; Ivanova, 1967).

ECOLOGY. In the Altay-Sayan Mts., the adults are usually on deciduous trees and tall bushes, relatively rare in tall vegetation with dicotyledon dominance.

Tribe Bergiolini

Genus *Eulithoxenus* Bey-Bienko, 1951

3. ***Eulithoxenus mongolicus*** **(Uvarov, 1928)**

Eulithoxenus mongolicus: Stebaev, 1980: 10; Sergeev, 1982: 43; Sergeev, 1991: 51–52; Benediktov, 1997: 117; Storozhenko, 2004: 127.

MATERIAL. **Tuva**: West Tannu-Ola Mts., near Khandagajty settlement, 50°48′N, 92°05′ and 50°44′N 92°09′E, 1100–1400 m, piedmonts with dry stony steppes with *Caragana* bushes and stony semi-deserts on mountain slopes, 18 and 23.VIII 1985, 1 ♂, 2 ♀ (Bugrov); East Tannu-Ola Mts., southern slope, near Shivelig River, 50°43′N, 94°33′E, 1300–1400 m, dry mountain steppes, 11.IX 1978, 2 ♂, 2 ♀ (IS, Lee).

REMARKS. The species was mentioned from Tuva (and the former USSR) for the first time by Stebaev (1980).

DISTRIBUTION. **Tuva**: WTO, ETO. – Mongolia, including the Mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977).

ECOLOGY. Rare in dry mountain steppes and semi-deserts and steppes with *Caragana* bushes on mountain slopes and piedmont plains, adults are in August and September, sometimes under stones (Sergeev, 1982, 1991).

Eulithoxenus emeljanovi **Mistshenko, 1968**

Eulithoxenus emeljanovi: Mistshenko, 1968: 486–487; Sergeev, 1986: 178.

DISTRIBUTION. Mongolia, including the Togtohyn-Shil Mts. in the southern part of Uvs-Nuur Intermountain Basin in NW Mongolia (Chogsomzhav, 1974).

Genus *Bienkoxenus* Čejchan, 1968

4. ***Bienkoxenus beybienkoi*** **(Stebaev, 1964)**

Eulithoxenus beybienkoi: Stebaev, 1964: 617.

Bienkoxenus beybienkoi: Sergeev, 1986: 178; Sergeev *et al.*, 1995: 97; Benediktov, 1997: 117; Storozhenko, 2004: 124.

MATERIAL. **Tuva**: West Tannu-Ola Mts., near Torgalyg settlement, 50°52′N, 92°36′E, 1200 m, 21–24.VI 1962, 2 ♀ (IS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44′N, 93°08′E, 750 m, piedmont plain, 27–28.VII 1962, 1 ♂, 3 ♀ (IS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44′N, 93°08′E, 938–973 m, 24.VI 1978, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 1 ♀, 2 larvae (IS, MS); the same locality, upper terrace, stony semi-desert with *Nanophyton grubovii* and *Stipa glareosa*, 30.VII 1978, 3 ♀ (MS); the same locality, plain, semi-desert with *Nanophyton grubovii*, 30.VII 1978, 1 ♀ (MS); NE Uvs-Nuur Basin, Shivelig River, 50°38′N, 94°28′E, 26.VII 1962, 1♀ (IS).

REMARKS. This species was described by Stebaev (1964) from the southern part of Tuva.

DISTRIBUTION. **Tuva**: WTO, UVS. – Mongolia, including Uvs-Nuur Basin in NW Mongolia (Chogsomzhav, 1972, 1977).

ECOLOGY. Relatively rare in the stony semi-deserts on piedmont plains and upper terraces. Its abundance commonly varies between 1 and 8 insects per hour.

Tribe Gampsocleidini

Genus *Gampsocleis* Fieber, 1852

***Gampsocleis glabra* (Herbst, 1786)**

Gampsocleis glabra: Sergeev, 1986: 180; Storozhenko, 2004: 97.

MATERIAL. **Krasnoyarsk Region**: 10 km NW Minusinsk City, Bystraya settlement (near the mouth of Minusinsk outlet), 9.VII 2014, steppe, 4 ♂, 3 ♀ (SS).

DISTRIBUTION. Europe (except the North), South Siberia, SW Asia, the Caucasus, Kazakhstan, Kyrgyzstan, NW China, W Mongolia. This species was recorded from the Republic of Khakassia and the southern part of Krasnoyarsk Region by Ivanova (1967, 1968).

ECOLOGY. Relatively rare in the meadow steppes, including the mountain ones.

5. ***Gampsocleis sedakovii* Fischer de Waldheim, 1846**

Gampsocleis sedakovi: Sergeev, 1986: 180; Sergeev *et al.*, 1995: 96–98; Benediktov, 1997: 117.
Gampsocleis sedakovii sedakovii: Storozhenko, 2004: 99.

MATERIAL. **Tuva**: W Sayan Mts., Alash Plateau, Ak-Sug River, 51°25′N, 91°04′E, 810 m, upper terrace, semi-desert, 13.VIII 2016, some specimens observed (MS); W Sayan Mts., Alash Plateau, Ak-Sug River, 51°30′N, 90°12′E, 1252 m, lower terrace, short meadow, 14.VIII 2016, 1 ♂ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44′N, 95°26′E, 1006 m, southern slope, stony steppe, 11.VIII 2018, 1 ♀ (MS); Kaa (Malyj Yenissei) River, right side, near Boyarovka settlement, 51°32′N, 95°21′E, 703 m, plain, dry steppe, 12.VIII 2018, some specimens observed in bushes (MS); 14 km SW Shagonar City, Shagonar River, 51°28′N, 92°44′E, 580–620 m, piedmont plains, dry steppe and abandoned field, 21.VI and 26.VI 2017, some specimens observed (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, plain, mixed steppe, 20.VII 2014, 2 ♂ (SS); the same locality, bottom of balka with wet meadow, 21.VII 2014, 2 ♂ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57′N, 95°16′E, 940 m, southeastern slope and piedmont plain, balka, meadow with *Cotoneaster* and *Larix*, 8.VII 1978, 1 ♂, 1 ♀, 3 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47′N, 95°11′E, 1030–1050 m, southern slope, piedmont plain and upper terrace, steppe, 9–10.VII1978, 3 ♂ (MS);

Shuurmak River near Shuurmak settlement, 50°38′N, 95°19′E, mixed meadow (cutted), 19.VII 2014, 1 ♂ (SS); 5 km N Shuurmak settlement, 50°38′N, 95°20′E, opening, 11.VII 2014, 1 ♂ (SS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48′N, 92°05′E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, 2 ♀ (MS); the same locality, 50°47′N, 92°03′E, 1200, lower terrace, meadow, 21.VIII 1985, several specimens observed (MS); the same locality, 50°47′N, 92°05′E, 1200–1250 m, piedmont plain, lower part, flood-plain of stream, meadows between bushes, 21.VIII 1985, 2 specimens observed (MS); the same locality, 50°50′N, 92°05′E, 1500–1550 m, piedmont plain, upper part, steppe, 21.VIII 1985, 2 ♀ (MS); the same locality, 50°47′N, 92°02′E, 1225 m, piedmont plain, lower part, lower terrace of stream, ruderal vegetation, 16.VIII 1985, some specimens observed (MS); the same locality, Mugur River, 50°46′N, 92°03′E, 1170 m, marsh, wet meadow with bushes, 17.VIII 1985, 1 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°52′N, 92°04′E, 2060 m, alpine steppe, 19.VIII 1978, some specimens observed (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51′N, 94°04′E, 1700–1900 m, mountain steppes, 19.VIII 1978, 2 ♂, 3 ♀, 2 larvae (MS); W Tannu-Ola Mts., NW Khandagajty settlement, near Solchur settlement, 50°46′N, 92°01′E, 1150–1200 m, abandoned fields and plots along canal, 21.VIII 1978, 2 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45′N, 92°09′E, 1150–1200 m, southern slope, stony semi-desert, 24.VIII 1978, some specimens observed (MS); W Tannu-Ola Mts., W Khandagajty settlement, 50°43′N, 92°04′E, 1150–1250 m, piedmont plains and northern slopes, semi-deserts, 24.VIII 1978, >3 ♂, 3 ♀ (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°38′N, 95°11′E, 1492 m, short meadow, 5.VII 2017, some specimens observed (MS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43′N – 50°45′N, 94°33′E – 94°34′E, 1200–1650 m, mountain slopes, piedmont plains, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >40 specimens, including larvae (MS, Myagkaya, Lee); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43′N, 94°33′E, 1200–1300 m, southern slopes and piedmont plain, steppes with *Caragana*, 24.VII 2003, 1 ♂ (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43′N, 94°17′E, 930 m, upper flood-plain, meadow, 30.VI 1978 2 larvae (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33′N, 94°31′E, 930–935 m, lower terrace and upper flood-plain, wet meadows, 13–14.VII 1978 3 ♂ (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38′N, 95°19′E, 17.VII 2014, 1 ♂ (SS); Uvs-Nuur Intermountain Basin, Dus-Khol, dry steppe, 25.VII 1962, 6 ♂ (IS); 25 km NEE Erzin settlement, Belyj Medved Mt., 50°21′N, 95°27′E, steppe, 16.VII 2014, 1 ♂, 2 ♀ (SS); 31 km NEE Erzin settlement, Erzin River, 50°21′N, 95°34′E, 1000 m, flood-plain, meadow near stony scarp, 18.VII 2014, 1 ♀ (SS); the same locality, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 1 ♀ (SS); 25 km SW Erzin settlement, Tes River, 50°05′N, 95°21′E, 14–15.VII 2014, 1 ♀ (SS); Uvs-Nuur Intermountain Basin, near Shara Lake, 50°13′N, 94°32′E, 902 m, plain, sandy semi-desert, 6.VII 2017, some specimens observed (MS); Sangilen Mts., 45 km E Tsagan-Tolgoj border outpost, towards Kachik settlement, 1900 m, 25.VIII 1993 (Benediktov). **Krasnoyarsk Region**: southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21′N, 93°13′E, 750–800 m, southern slopes, steppe, 22.VII 1995, 1 ♂, 1 larva (MS).

DISTRIBUTION (nominotypical subspecies). **Tuva**: WSW, ET, UKH, KKH, WTO, ETO, UVS, SAN. - The forest-steppes and steppes of Russia from the Volga River to Transbaikalia (Republic of Buryatia and Zabaykalsky Krai) and Republic of Sakha (Yakutia), N, NE Kazakhstan, Mongolia, N China. This subspecies was recorded from SE Altay (Sergeev *et al.*, 1995), Krasnoyarsk Region and southeastern part of the Republic of Khakassia (Miram, 1907; Ivanova, 1967) and the Mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977).

ECOLOGY. The most common and widely distributed species of Ensifera in the region. It usually occurs in different types of the steppes, semi-deserts and on more or less dry meadows, especially with some bushes, over the wide spectrum of altitudes. In many cases, its abundance is relatively high (up to 30 per hour).

Tribe Decticini

Genus *Decticus* Audinet Serville, 1831

6. ***Decticus verrucivorus* (Linnaeus, 1758)**

Decticus verrucivorus: Sergeev, 1986: 180; Benediktov, 1997: 117.
Decticus verrucivorus verrucivorus: Storozhenko, 2004: 134.

MATERIAL. **Tuva**: E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44′ N, 95°26′ E, 958 m, upper terrace, steppe, 11.VIII 2018, 1 ♂ (MS); 14 km SW Shagonar City, Shagonar River, 51°28′N, 92°45′E, 580–600 m, piedmont plains, abandoned field, 26.VI 2017, some specimens observed (MS); Ulug-Khem Intermountain Basin, road Shagonar–Chadan, Torgalyg River, near bridge, 13.VIII 1995, 1 ♂ (Benediktov); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57′N, 95°16′E, 940 m, piedmont plain, balka, meadow between larches, 8.VII 1978, a specimens recorded (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, left side, 15 km S Balgazyn settlement, 50°53′N, 95°12′E, 900–950 m, piedmont plain of E Tannu-Ola Mts., meadow, 9.VII 1978, 3 ♂, 2 ♀, 1 ♂ (larva), 1 ♀ (larva) (MS). **Krasnoyarsk Region**: 10 km NW Minusinsk City, Bystraya settlement (near the mouth of Minusinsk outlet), 9.VII 2014, steppe, 2 ♂, 1 ♀ (SS); Oya River, near Ermakovskoje settlement, 53°17′N, 92°28′E, 291 m, pine forest, ouval with meadow, 17.VII 1995, a specimen observed (MS); southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21′N, 93°13′E, 750–800 m, southern slopes, steppe, 22.VII 1995, 1 ♂ (MS).

DISTRIBUTION (nominotypical subspecies). **Tuva:** ET, UKH, KKH. – Europe, Siberia and Russian Far East (except the North), SW Asia, the Caucasus, Kazakhstan, Kyrgyzstan, N China, Mongolia, Japan (Hokkaido). This species was recorded from Krasnoyarsk Region (Miram, 1907) and southern part Republic of Khakassia, including Us Intermountain Basin (Ivanova, 1967; our data).

ECOLOGY. In the region, the species is commonly associated with meadows of its central and northern parts. Rare, however, in optimal habitats, its abundance may be up to 24 per hour.

Tribe Platycleidini

Genus *Montana* Zeuner, 1941

7. ***Montana montana* (Kollar, 1833)**

Platycleis montana: Ivanova, 1967: 130; Benediktov, 1997: 118.
Montana montana: Sergeev, 1986: 180; Sergeev *et al.*, 1995: 96–98.
Montana montana montana: Storozhenko, 2004: 142.

MATERIAL. **Tuva**: 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, plain, mixed steppe, 20.VII 2014, 3 ♂, 2 ♀ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57′N, 95°16′E, 940 m, south-eastern slope and upper terrace, balka, dry meadows with *Cotoneaster, Larix* and *Caragana*

pigmaea, 8.VII 1978, 1 ♀, 1 larvae (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, 25 km S Balgazyn settlement, near Kuran settlement, 50°47′N, 95°17′E, 1030–1050 m, upper terrace, dry steppe, 9.VII 1978, 3 ♂, 4 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°52′N, 92°04′E, 2060 m, alpine steppe, 19.VIII 1978, 3 ♂, 2 ♀, 3 larvae (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51′N, 94°04′E, 1700–1900 m, mountain steppes, 19.VIII 1978, 7 ♂, 14♀, 3 larvae (MS); E Tannu-Ola Mts., Shuurmak Pass, 50°37′N, 95°11′E, 1495 m, mountain steppe, 12.VII 1978, 1 ♀, 1 larvae (MS); E Tannu-Ola Mts., 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38′N, 95°11′E, 1500 m, mountain pasture, 3 ♂, 6 ♀ (SS); E Tannu-Ola Mts., Shivelig River, 50°43′N, 94°33–94°34′E, 1200–1350 m, mountain slopes, terraces, dry meadows and steppes, often with bushes and stones, 24.VI–12.VIII 1978, >5 ♂, 2 ♀, 1 larvae (MS, Myagkaya, Lee); 31 km NEE Erzin settlement, Erzin River, 50°21′N, 95°34′E, 1300 m, northern slope, balka with *Caragana*, 18.VII 2014, 6 ♂ (SS). **Krasnoyarsk Region**: southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21′N, 93°13′E, 750–800 m, southern slopes, steppe, 22.VII 1995, 1 ♀ (MS); the same locality, 52°16′N, 93°07′E, 650–700 m, upper terrace, stony steppe, 23.VII 1995, 1 ♂1 ♀ (MS).

DISTRIBUTION. **Tuva**: KKH, WTO, ETO, SAN. – Europe (except the North), South Siberia, Sakha (Yakutia), Kazakhstan, N China, Mongolia. Distribution in adjacent regions: SE Altay (Sergeev *et al.*, 1995); Republic of Khakassia, southeastern part (Ivanova, 1967); Krasnoyarsk Region: Us Intermountain Basin (Ivanova, 1967; our data); NW Mongolia, including the Togtohyn-Shil Mts. (Chogsomzhav, 1974).

ECOLOGY. The species prefers different types of short meadows and mountain steppes, sometimes its abundance may be relatively high (especially for katydids), up to 32–42 per hour.

8. ***Montana eversmanni* (Kittary, 1849)**

Platycleis eversmanni: Ivanova, 1967: 130.
Montana eversmanni: Sergeev, 1985: 48; 1986: 181.
Montana eversmanni eversmanni: Storozhenko, 2004: 144.

MATERIAL. **Tuva**: Turan-Uyuk Intermountain Basin, Begreda River, 51°59′N, 94°18′E, 830 m, piedmont plain, semi-desert, 12.VIII 2018, 1 ♂ (MS); Chaa-Khol River, 51°34′N, 92°23′E, 570–600 m, dry steppe, 14.VII 1962, 2 ♂ (IS); 14 km SW Shagonar City, Shagonar River, 51°28′N, 92°44′E, 580–629 m, northern slope and piedmont plain, dry steppe and abandoned field, 23 and 26.VI 2017, 3 ♀ (MS); 25 km SW Kyzyl City, Ulug River, 51°35′N, 94°09′E, 630–650 m, piedmont plain, semi-desert, 19.VII.1995, a specimen observed (MS); Ulug-Khem Intermountain Basin, Elegest River, middle part, 51°22′N, 94°04′E, 695 m, upper terrace, dry steppe, 16.VI 2017, a specimen observed (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, balka, mixed steppe, 21.VII 2014, 1 ♀ (SS); E Tannu-Ola Mts., Shivelig River, 50°45′N, 94°34′E, 1300–1350 m, upper terrace, dry meadow, 12.VIII 1978, 1 ♂, 1 ♀ (MS). **Krasnoyarsk Region.** Southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°16′N, 93°07′E, 650–700 m, piedmont plain, stony steppe, 23.VII 1995, 3 ♀ (MS).

DISTRIBUTION. **Tuva**: WSE, UKH, KKH, ETO. – From the steppes of European Russia to the steppes of South Siberia, Central Sakha (Yakutia), Kazakhstan, Mongolia.This species was recorded from SE Altay (Sergeev *et al.*, 1995), the southeastern part of the Republic of Khakassia, (Ivanova, 1967) and the southern part of Krasnoyarsk Region.

ECOLOGY. Usually in the mountain steppes and on the dry meadows. Its abundance is commonly low. Very rare together with *Montana montana*.

9**. ***Montana tomini*** **(Pylnov, 1916)**

Montana tomini: Sergeev, 1986: 181; Storozhenko, 2004: 146; Sergeev & Storozhenko, 2018: 31–32.

MATERIAL. **Tuva**: E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37′N, 95°21′E, 819 m, upper terrace, steppe with *Stipa capillata*, 11.VIII 2018, 1 ♀ (MS); Chaa-Khol River, 51°34′N, 92°23′E, 570–600 m, dry steppe, 16–18.VII 1962, 1 ♂, 1 ♀ (IS); 14 km SW Shagonar City, Shagonar River, 51°28′N, 92°44′E, 585 m, dry steppe on piedmont plain, 23.VI 2017, 3 larvae (MS); 32 km SW Kyzyl City, Elegest River, 51°29′N, 94°10′E, 580 m, steppe, 22.VII 2014, 1 ♀ (SS); 25 km SW Kyzyl City, Ulug River, 51°35′N, 94°09′E, 630–650 m, dry steppe, 6.VIII.1978, 1 ♀, 1 larva (MS); N Uvs-Nuur Intermountain Basin, 5 km W Torgalyg settlement, 50°52′N, 92°36′E, 1600 m, dry steppe with *Caragana*, 16.VIII 1985, 9 larvae (IS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°38′N, 94°28′E, 990–1000 m, dry steppes on piedmont plains and terraces, 28.VI–18.VII 1978, 5 larvae (MS); the same locality, dry steppe along runnel, 30.VIII 1962, 1 ♂, 2 ♀, 1 larva (IS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°38′N, 94°28′E, 990–1000 m, dry steppes on piedmont plains and terraces, 28.VI–18.VII 1978, 5 larvae (MS); the same locality, dry steppe along runnel, 30.VIII 1962, 1 ♂, 2 ♀, 1 larva (IS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38′N, 95°19′E, 17.VII 2014, 4 ♂, 2 ♀ (SS); Tes-Khem River, 25 km SW Erzin settlement, 50°05′N, 95°21′E, 14–15.VII 2014, 1 ♂ (SS); Tes-Khem River, 25 km NEE Erzin settlement, 50°21′N, 95°27′E, 1300 m, steppe, 16.VII 2014, 5 ♂, 2 ♀ (SS); Tes-Khem River, 31 km NWW Erzin settlement, 50°21′N, 95°34′E, 1000 m, bottomland meadow, 16.VII 2014, 3 ♀ (SS); the same locality, 1200 m, depression with *Caragana* bushes, 18.VII 2014, 2 ♂, 3 ♀ (SS). **Krasnoyarsk Region**: south-western part, near Uchum Lake, 55°06′N, 89°44′E, 400–500 m, southern slope, stony steppe with *Stipa capillata*, 29.VII 1960, 1 ♂ (IS).

REMARKS. Data about distribution of this species in Tuva were published for the first time by Ivković *et al.* (2017) and Sergeev & Storozhenko (2018). The vicinities of Uchum Lake are the north-westernmost locality for this species.

DISTRIBUTION. **Tuva**: ET, UKH, UVS, SAN. – South Siberia, China (Inner Mongolia), Mongolia. Here this species is recorded from Krasnoyarsk Region for the first time.

ECOLOGY. The species commonly prefers different variants of the dry steppes on the local piedmont plains and river terraces with dominance of grasses (*Stipa* spp. and *Festuca valesiaca*), sagebrushes, some xerophilous forbs, and often with presence of *Caragana* spp. bushes and stones. Sometimes it may inhabits meadows and agricultural fields. The level of its abundance is relatively low (up to 12 per hour), however, in optimal habitats the abundance may be high (up to 26 per hour).

Genus *Platycleis* Fieber, 1852

10*. ***Platycleis albopunctata*** **(Goeze, 1778)**

Platycleis grisea: Miram, 1907: 8.
Platycleis intermedia: Sergeev, 1986: 181.
Platycleis intermedia intermedia: Storozhenko, 2004: 137.
Platycleis albopunctata transiens: Korsunovskaya, 2016: 301–308.

MATERIAL. **Tuva**: E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44′N, 95°26′E, 1006 m, southern slope, stony steppe, 11.VIII 2018, 1 ♀

(MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37′N, 95°20′E, 843 m, southern slope, stony steppe, 11.VIII 2018, 1 ♀ (MS); Chaa-Khol River, 51°34′N, 92°23′E, 570–600 m, dry steppe, 10–17.VII 1962, 1 ♂, 6 ♀ (IS); the same locality, 16.VIII 1962, 1 ♂ (IS); Ulug-Khem Intermountain Basin, 40 km W Elegest River mouth, dry steppe with *Nanophyton grubovii*, 15.VIII 1962, 1 ♀ (IS); 25 km SW Kyzyl City, Ulug River, 51°35′N, 94°09′E, 630–650 m, piedmont plain, semi-desert, 19.VII.1995, a specimen observed (MS); Ulug-Khem Intermountain Basin, 8 km N Cheder Lake, 09–10.VIII 1962, 3 ♂ (IS); NE Uvs-Nuur Intermountain Basin, Shivelig River, 50°43′N, 94°33′E, 1259 m, piedmont plain, steppe, 08.VII 2017, 1 ♂ (MS). **Krasnoyarsk Region**: 10 km NW Minusinsk City, Bystraya settlement (near the mouth of Minusinsk outlet), 9.VII 2014, steppe, 3 ♂, 4 ♀ (SS).

REMARKS. Korsunovskaya (2016) analyzed acoustic signals of males from the *Platycleis albopunctata–grisea–intermedia* group and supposed that only *P. albopunctata* is distributed in the former USSR countries. However, there are no data concerning acoustic signals of the *Platycleis albopunctata–grisea-intermedia* group in the eastern part of their joint range. The nearest localities from where the acoustic signals of *P. albopunctata* were recorded are in South Uzbekistan (Termez) (Korsunovskaya, 2016) and the Volga River Basin (Samarskaya Luka) (Benediktov, 2017). This means the problem of determination of these katydids remains still unsolved for this territory.

DISTRIBUTION. **Tuva**: ET, UKH, UVS. – S Europe, S Siberia, SW Asia, the Caucasus, Kazakhstan, Middle Asia, NW China (?), Mongolia (?). This species was recorded from south-eastern part Republic of Khakassia and southern part of Krasnoyark Region as *P. intermedia* or *P. grisea* (Miram, 1907; Ivanova, 1967).

ECOLOGY. The species usually occurs in the dry steppes and semi-deserts with abundant grasses. As a rule, its abundance is very low.

11*. ***Platycleis affinis*** **Fieber, 1853**

MATERIAL. **Tuva**: Ulug-Khem Intermountain Basin, Ulug (Upper Yenissei) River, right side, Kyzyl vicinities, Tuge Mt., 12.VIII 1995, 2 ♂ (Benediktov – collecting and recording).

REMARKS. The songs of this species were characterized by several authors (Broughton, 1955, 1965; Samways, 1976a, b; Schmidt & Schach, 1978; Heller, 1988; Ragge, 1990; Ragge & Reynolds, 1998; Oliveira *et al.*, 2001; Sevgili *et al.*, 2011) from Western Europe and Anatolia. The calling song (Fig. 2, a–d) consisted of a mixture of short echemes, lasting less than 1 second and usually composed of 1–7 macrosyllables, and longer echemes lasting from 4–7 seconds and composed of 10–56 macrosyllables. Each echeme usually ends with a series of 0–7 microsyllables. The calling songs of males from the Kyzyl vicinities are quite similar to the songs recorded from Western Europe and Anatolia.

DISTRIBUTION. **Tuva**: UKH. – Southern parts of Europe, N Africa, Anatolia, Syria, N Iran, Turkmenistan, Uzbekistan, Kazakhstan, Kyrgyzstan. The easternmost known part of the species range is in Kazakhstan (Childebaev & Storozhenko, 2004). In the Russian Federation, the nearest known and easternmost locality is in the vicinities of Orenburg (Vorontsovsky, 1911; Bey-Bienko, 1928). Here this species is recorded from the Asian part of Russia for the first time.

ECOLOGY. Very rare, probably in the same habitats as *Platycleis albopunctata*.

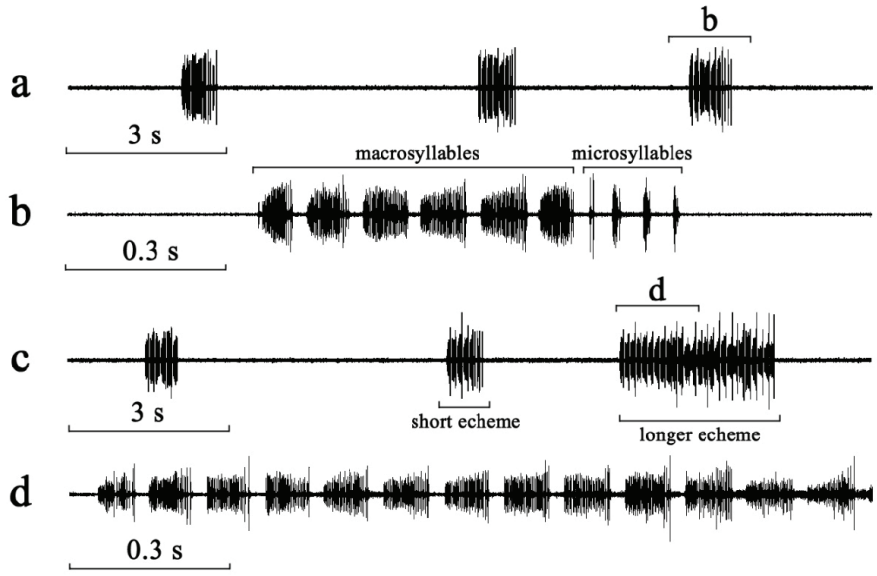

Fig. 2. Oscillograms of calling signals of male *Platycleis affinis* from Kyzyl at different sweep speed.

Genus *Metrioptera* Wesmael, 1838

12. ***Metrioptera brachyptera* (Linnaeus, 1761)**

Metrioptera brachyptera: Sergeev *et al.*, 1995: 96–98; Benediktov, 1997: 118; Storozhenko, 2004: 149.

MATERIAL. **Tuva**: W Sayan Mts., Alash Plateau, Ak-Sug River, 51°37′N, 90°05′E, 1450 m, southern slope, meadow with bushes, 14.VIII 2016, 1 ♂, 1 ♀ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°52′N, 95°26′E, 1230 m, terrace, meadow, 10.VIII 2018, 1 ♂ (MS); 14 km SW Shagonar City, Shagonar River, 51°27′N, 92°45′E, 583 m, lower terrace, meadow between bushes, 18.VI 2017, 1 ♂ (larva) (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, plain, mixed steppe, 20.VII 2014, 1 ♀ (SS); SE Ulug-Khem Intermountain Basin, Uzun-Kharagan River, near Balgazyn settlement, 50°57′N, 95°15′E, 886 m, lower terrace and upper floodplain, wet meadow, 8.VII 1978, 1 ♂, 2 ♀ (larvae) (MS); SE Ulug-Khem Intermountain Basin, Shuurmak River, left side, 15 km S Balgazyn settlement, 50°53′N, 95°12′E, 900–950 m, piedmont plain of E Tannu-Ola Mts., meadow, 9–9.VII 1978, 2 ♂ (larvae) (MS); W Tannu-Ola Mts., 5 km N Khandagajty settlement, Mugur River, 50°46′N, 92°03′E, 1170 m, marsh, wet meadow with bushes, 17.VIII 1985, 1 ♂, 1 ♀ (MS); W Tannu-Ola Mts., 9 km N Khandagajty settlement, 50°51′N, 94°04′E, 1900 m, mountain steppes, 19.VIII 1978, a specimen observed (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, Mugur River, 50°44′N, 92°08′E, 1100–1150 m, lower terrace, meadow 24.VIII 1978, 1 ♂ (MS); W Tannu-Ola Mts., 5 km W Torgalyg settlement, Khandybai Mt., near timber-line, meadows, 23.VI 1962, 3 larvae (IS); E Tannu-Ola Mts., Shivelig River, 50°45′N, 94°34′E, 1300–1350 m, upper terrace, steppe, 12.VIII 1978, 1 ♂ (MS); 13 km NEE Samagaltaj settlement, Kaldak-Khamar (Shuurmak) Pass, 50°38′N, 95°11′E, 1550 m, open larch forest, 3 ♂, 1 ♀ (SS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38′N, 95°19′E, 17.VII 2014, 1 ♂

(larva) (SS). **Krasnoyarsk Region**: southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20′N, 93°20′E, 700–800 m, terraces, meadows, 22.VII 1995, 1 ♀ (MS).

DISTRIBUTION. **Tuva**: WSW, ET, UKH, KKH, WTO, ETO, UVS. – Europe (except the South and extreme North), Siberia (except the North) and the Russian Far East, Kazakhstan, Mongolia, NE China, Korea. This species was also recorded from Us Intermountain Basin in Krasnoyarsk Region (Ivanova, 1967, 1968; our data).

ECOLOGY. In South Siberia, the species is more or less common on mountain meadows and openings in the forest altitudinal belts. Sometimes its abundance can be relatively high, up to 12–20 per hour.

Genus *Bicolorana* Zeuner, 1941

13. ***Bicolorana bicolor* (Philippi, 1830)**

Bicolorana bicolor: Sergeev, 1986: 182
Metrioptera bicolor: Benediktov, 1997: 118.
Bicolorana bicolor bicolor: Storozhenko, 2004: 156.

MATERIAL. **Tuva**: E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44′ N, 95°26′ E, 960–1006 m, southern slope and upper terrace, steppe, 11.VIII 2018, 2 ♂ (MS); E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°37′N, 95°21′E, 788 m, terraces, steppe and dry meadow, 11.VIII 2018, 2 ♂, 4 ♀ (MS); 14 km SW Shagonar City, Shagonar River, 51°27′N, 92°45′E, 586 m, lower terrace, steppe with *Stipa capillata*, 17.VI 2017, 1 ♀ (MS); the same locality, 583 m, lower terrace, meadow between bushes, 18.VI 2017, 1 ♂ (larva) (MS); 32 km SW Kyzyl City, Elegest River, 51°29′N, 94°10′E, steppe, 22.VII.2014, 1 ♂ (SS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, plain, mixed steppe, 20–21.VII 2014, 6 ♂, 6 ♀ (SS); the same locality, bottom of balka with wet meadow, 21.VII 2014, 2 ♂ (SS); Sangilen Mts., 10 km S Naryn settlement, 2 km E Tagydty Pass, 2000 m, 26.VIII 1994, 1 ♂ (Benediktov). **Krasnoyarsk Region**: Southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21′N, 93°13′E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 1 ♀, 2 ♀ (larva) (MS); the same locality, 52°16′N, 93°07′E, 680–700 m, piedmont plain, steppe, 23.VII 1995, 3 ♂, 1 ♂ (larva), 1 ♀ (larva) (MS).

DISTRIBUTION. **Tuva**: ET, UKH, KKH, SAN. – Europe (except the extreme North and the Mediterranean regions), Siberia and the Russian Far East (except their northern parts), Kazakhstan, Mongolia, NE China. This species is known from adjacent regions: Republic of Khakassia, southeastern part (Miram, 1907), Krasnoyarsk Region: Us Intermountain Basin (Ivanova, 1967, 1968; our data) and NW Mongolia, including the Togtohyn-Shil Mts. (Chogsomzhav, 1974).

ECOLOGY. This species prefers the meadows and meadows steppes, it also occurs in the typical steppes with grass dominance. *Bicolorana bicolor* is widely distributed, but their abundance is relatively low even in preferable habitats.

Genus *Roeseliana* Zeuner, 1941

14*. ***Roeseliana fedtschenkoi* (Saussure, 1874)**

Metrioptera fedtschenkoi: Ivanova, 1967: 130.
Bicolorana (Roeseliana) fedtschenkoi: Sergeev, 1986: 182; Storozhenko, 2004: 160.

MATERIAL: **Tuva**: E Tuva, Academician Obruchev Range, southern slope, Koptu (Khapto) River, 51°44′N, 95°26′E, 960 m, upper terrace, steppe, 11.VIII 2018, 1 ♀ (MS); Chaa-Khol River, 51°34′N, 92°23′E, 570–600 m, flood-plain, 17.VII 1962, 2 ♀ (larvae) (IS); 14 km SW Shagonar City, Shagonar River, 51°27′N, 92°45′E, 583 m, lower terrace, meadow between bushes, 18.VI 2017, 2 ♂, 2 ♀, 2 ♂ (larvae), 2 ♀ (larvae) (MS); the same locality, 581 m, upper terrace, dry meadow, 24.VI 2017, 1 ♂, 1 ♂ (larva) (MS); 6 km SE Baj-Haak settlement, Sosnovka settlement, 51°08′N, 94°32′E, bottom of balka with wet meadow, 21.VII 2014, 2 ♂, 1 ♀ (SS); Shuurmak River near Shuurmak settlement, 50°38′ N, 95°19′ E, mixed meadow (cutted), 19.VII 2014, 3 ♂, 1 ♀ (SS);

DISTRIBUTION. **Tuva**: ET, UKH, KKH. – S Siberia, Sakha (Yakutia), the Caucasus, Kazakhstan, mountains of Middle Asia, Mongolia. This species was recorded also from Us Intermountain Basin in Krasnoyarsk Region (Ivanova, 1967) and mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977).

ECOLOGY. The preferable habitats of the species are the different meadows and meadow steppes, relatively wet, usually with dense vegetation. In the optimal environment in Tuva, abundance of this species may be very high (relative to katydids) – up to 120 per hour.

***Roeseliana roeselii* (Hagenbach, 1822)**

Bicolorana (Roeseliana) roeselii: Sergeev, 1986: 182; Storozhenko, 2004: 158.

MATERIAL: **Krasnoyarsk Region**: southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°20′N, 93°20′E, 700–750 m, lower terrace, meadow, 22.VII 1995, 1 ♂ (MS).

DISTRIBUTION. Europe (except the North), the southern part of W Siberia, Kazakhstan, Mongolia, N China. This species is known from the Mongolian part of Uvs-Nuur Basin (Chogsomzhav, 1977) and Krasnoyarsk Region.

ECOLOGY. Mountain meadows with more or less dense vegetation.

Subfamily Conocephalinae

Tribe Conocephalini

Genus *Conocephalus* Thunberg, 1815

Subgenus *Anisoptera* Latreille, 1829

***Conocephalus dorsalis* (Latreille, 1804)**

Conocephalus dorsalis: Ivanova, 1967: 130; Sergeev, 1986: 183
Conocephalus (Anisoptera) dorsalis: Storozhenko, 2004: 80.

MATERIAL. **Krasnoyarsk Region**: southern part, near Shushenskoye urban-type settlement, 28.VII 2003, 1 ♂, 2 ♀ (I.A. Rodionov).

DISTRIBUTION. Europe (except the North), the southern parts of W Siberia and Krasnoyarsk Region, the Republic of Khakassia, Anatolia, the Caucasus, Kazakhastan.

ECOLOGY. The typical habitats are the wet meadows on flood-plains.

Subgenus *Amurocephalus* Storozhenko, 2004

***Conocephalus chinensis* (Redtenbacher, 1891)**

Conocephalus chinensis: Benediktov, 1997: 118; Benediktov, 2006: 28.
Conocephalus (Amurocephalus) chinensis: Storozhenko, 2004: 73; Storozhenko *et al.*, 2015: 45.

REMARKS. The record for Tuva (Storozhenko *et al.*, 2015) is mistake. Really this species has bee recorded from the southern coast of Uvs-Nuur in NW Mongolia based on oscillograms of acoustic signals produced by male (Benediktov, 1997, 2006).

DISTRIBUTION. Russia (the southern parts of Transbaikalia and the Far East, including Sakhalin and S Kurile Islands), NW Mongolia (Benediktov, 1997, 2006), NE China, Korea, Japan.

ECOLOGY. The typical habitats are the wet meadows on flood-plains.

Subfamily Odonturinae

Tribe Odonturini

Genus *Poecilimon* Fischer, 1853

15*. ***Poecilimon intermedius* (Fieber, 1853)**

Poecilimon intermedius: Sergeev, 1986: 177; Storozhenko, 2004: 67–68.

MATERIAL. **Tuva**: Turan-Uyuk Intermountain Basin, Begreda River, 51°59′N, 94°18′E, 829 m, terrace, meadow, 12.VIII 2018, 6 ♀ (MS). **Krasnoyarsk Region**: southern part, West Sayan Mts., Us Intermountain Basin, near abandoned Idzhim settlement, 52°21′N, 93°13′E, 780–800 m, southern slope, dry mountain meadow and steppe, 22.VII 1995, 6 ♀ (MS); the same locality, 52°20′N, 93°20′E, 710 m, upper terrace, meadow with bushes, 22.VII 1995, 1 ♀ (larva) (MS); the same locality, 52°16′N, 93°07′E, 680–700 m, piedmont plain, steppe, 23.VII 1995, 16 ♀ (larva) (MS).

DISTRIBUTION. **Tuva**: WSE. – European Russia (except the North), the Ukraine, S Siberia, Kazakhstan, N Tien Shan, Mongolia. This species was recorded from the Us Intermountain Basin in Krasnoyarsk Region (Ivanova, 1967, 1968; our data).

ECOLOGY. The species prefers the dry meadows, meadow and typical steppes with presence of mesophilous forbs. In the optimal habitats it may be very abundant. All populations of this species from Tuva and Krasnoyarsk Region are characterized by absence of males.

Subfamily Zichyinae

Tribe Zichyini

Genus *Deracantha* Fischer de Waldheim, 1833

16. ***Deracantha onos* (Pallas, 1772)**

Deracantha onos: Segeev & Bugrov, 1988: 47–48.

REMARKS. The first data concerning distribution of this species in Uvs-Nuur Intermountain Basin were published by Sergeev & Bugrov (1988). Unfortunately, the labels of these two specimens (1 ♂, 1 ♀) include only some general geographic information (Uvs-Nuur Intermountain Basin). We may suppose that they were mislabeled. The westernmost exact localities are in the Selenga River Basin in the central part of Mongolia (Chogsomzhav, 1972).

DISTRIBUTION. **Tuva**: UVS (?). – Transbaikalia (Dauria), Amur Region, C and E Mongolia, NE China.

ECOLOGY. In the main part of its range, the species occurs in different habitats – from forest edges and opening up to grain fields. Males and females are usually on the soil surface. As a rule, the level of its abundance is low. Chogsomzhav (1989) mentioned some association of this species with the dry steppes. This means there are some opportunities for presence of populations of *Deracantha onos* in Tuva.

Genus *Deracanthella* I. Bolivar, 1901

17. ***Deracanthella aranea* (Fischer de Waldheim, 1833)**

Deracantella verrucosa: Zhantiev *et al.*, 1995: 59; Benediktov, 1997: 118.
Deracantella aranea: Storozhenko, 2004: 174

REMARKS. This species was recorded from Tuva for the first time based on specimens collected in sandy steppe near Erzin settlement in Uvs-Nuur Intermountain Basin (Zhantiev *et al.*, 1995)

DISTRIBUTION. **Tuva**: UVS. – Transbaikalia (Dauria), Mongolia, including Uvs-Nuur Basin in NW Mongolia (Chogsomzhav, 1974, 1977).

ECOLOGY. The species prefers the dry steppes.

Genus *Deracanthina* Bey-Bienko, 1951

18. ***Deracanthina deracanthoides* (Bey-Bienko, 1933)**

Zichya deracantoides: Cherepanov, 1951: 206.
Deracanthina deracantoides: Sergeev, 1985: 48; Sergeev & Bugrov, 1988: 49; Zhantiev *et al.*, 1995: 59; Benediktov, 1997: 117.
Deracanthina deracantoides deracantoides: Storozhenko, 2004: 178.

MATERIAL. **Tuva**: W Tannu-Ola Mts., 5 km N Khandagajty settlement, 50°48′N, 92°05′E, 1300–1350 m, piedmont plain, stony steppes with *Caragana*, 16.VIII 1985, some specimens observed (MS); W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45′N, 92°09′E, 1150–1200 m, southern slope, stony semi-desert, 24.VIII 1978, some specimens observed (MS); W Tannu-Ola Mts., W Khandagajty settlement, 50°42′N, 92°03′E, 1200–1250 m, northern slope, semi-desert with *Caragana*, 24.VIII 1978, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44′N, 93°08′E, 938–973 m, 24.VI 1978, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 1 ♂ (larva), 3 ♀ (larvae) (IS, MS); the same locality, 984 m, 29.VII 1978, upper terrace, semi-desert, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, 50 km E Amdaygyn-Khol, dry steppe with *Nanophyton grubovii*, 26.VII 1962, 1 ♀ (IS); NE Uvs-Nuur Basin, Shivelig River, 50°39′N, 94°28′E, 997 m, lower terrace, dry steppe with *Cargana*, 18.VII 1978, 1♂ (MS).

REMARKS. The species was also found on the Kargy River near Mugur-Aksy (MT) (Sergeev, 1985) on the altitudes about 1700–1900 m.

DISTRIBUTION. **Tuva**: MT, WTO, UVS. – Mongolia, including Uvs-Nuur Basin in NW Mongolia (Chogsomzhav, 1974, 1977).

ECOLOGY. The species prefers the stony semi-deserts with *Caragana* or *Nanophyton grubovii* on the piedmont plains of Uvs-Nuur Intermountain Basin. The katydids sing commonly on stones (especially on pebbles). Species abundance may be very relatively high, up to 700 per ha (Sergeev & Bugrov, 1988).

Genus *Zichya* I. Bolivar, 1901

19. ***Zichya baranovi* (Bey-Bienko, 1933)**

Zichya baranovi: Cherepanov, 1951: 207; Sergeev & Bugrov, 1988: 51; Zhantiev *et al.*, 1995: 59; Benediktov, 1997: 117.

Zichia baranovi baranovi: Storozhenko, 2004: 176.

MATERIAL. **Tuva**: W Tannu-Ola Mts., 4 km E Khandagajty settlement, 50°45′N, 92°09′E, 1150–1200 m, southern slope and piedmont plain, stony semi-desert with *Nanophyton grubovii*, 24.VIII 1978, 1 ♂ (MS); W Tannu-Ola Mts., W Khandagajty settlement, 50°43′N, 92°04′E, 1150–1250 m, northern slope and piedmont plains, semi-desert with *Nanophyton grubovii*, 24.VIII 1978, 1 ♂, 1 ♀ (MS); N Uvs-Nuur Intermountain Basin, Iribitej River, 50°44′N, 93°08′E, 938–973 m, 24.VI 1978, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 2 ♂ (larvae), 2 ♀ (larvae) (IS, MS); the same locality, 30.VII 1978, piedmont plains and terraces, stony semi-deserts with *Nanophyton grubovii*, 1 ♂, 4 ♀ (MS); NE Uvs-Nuur Intermountain Basin, Khol-Oozhu River, 50°43′N, 94°17′E, 930 m, piedmont plain, lower part, meadow, semi-desert with *Nanophyton grubovii,* 16.VII1978,

Fig. 3. *Zichya baranovi baranovi* (Bey-Bienko), male, Uvs-Intremountain Basin, Tsuger-Els, sandy semi-desert (photo of M.G. Sergeev).

2 ♂, 1 ♀ (MS); Uvs-Nuur Intermountain Basin, Tes River, 50°33′N, 94°31′E, 930–935 m, upper terrace, dry steppe, 27.VI 1978 1 ♂ (larva), 1 ♀, 4 ♀ (larvae) (MS); the same locality, upper terraces, dry steppes, 14.VII 1978, 9 ♂, 7 ♀ (MS); Dyttyg-Khem River, 12 km SW Samagaltai settlement, 50°38′N, 95°19′E, 17.VII 2014, 1 ♂, 1 ♀ (SS); the same place, 9.VII 2013, 1 ♂, 1 ♀ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 3 km WNW Shara-Nuur, 50°14′N, 94°28′E, 19.VII 1978, 1097 m, piedmont plain, stony semi-deserts with *Nanophyton grubovii*, 1 ♂ (MS); Uvs-Nuur Intermountain Basin, Dus-Khol, dry steppe, 25.VII 1962, 4 ♂ (IS); Uvs-Nuur Intermountain Basin, E Shara-Nuur, Yamalyg farwell rocks, 50°14′N, 94°45′E, 1150 m, piedmont plain, dry steppe, 6.VII 2017, numerous specimens observed (MS); Erzin settlement, 29.VI 2013, 1 larva (M. Prostshalykin, V. Loktionov); 25 km NEE Erzin settlement, Belyj Medved Mt., 29.VI 2013, 1 ♂ (M. Prostshalykin, V. Loktionov); 7 km SW Erzin settlement, Tes River, 50°12′N, 95°08′E, 13.VII 2014, high ouvals with *Caragana* near bridge, 9 ♂, 5 ♀ (SS); near Tore-Khol, 30.VI 2013, 1 ♂, 2 ♀ (M. Prostshalykin, V. Loktionov); Uvs-Nuur Intermountain Basin, 10 km S Erzin settlement, Tsuger-Els, 50°10′N, 95°11′E, 1154 m, sandy semi-desert, 23.VII 1978, some specimens observed (MS); Uvs-Nuur Intermountain Basin, 14 km S Erzin settlement, Tsuger-Els, 50°06′N, 95°15′E, 1224 m, sandy semi-desert, 5.VII 2017, numerous specimens observed (MS).

DISTRIBUTION. **Tuva**: WTO, UVS. – Mongolia, including Uvs-Nuur Basin in NW Mongolia (Chogsomzhav, 1974, 1977).

ECOLOGY. The species is relatively common and abundant in Uvs-Nuur Intermountain Basin (Fig. 3). It prefers the semi-deserts (both stony and sandy) with *Caragana* or *Nanophyton grubovii* on the piedmont plains and terraces of local rivers and lakes. The katydids sing commonly on different substrates. Species abundance may be very high, up to 5800 per ha (Sergeev & Bugrov, 1988).

FAMILY GRYLLIDAE

Subfamily Gryllinae

Tribe Gryllini

Genus *Acheta* Fabricius, 1775

20*. ***Acheta domesticus* (Linnaeus, 1758)**

Acheta domestica: Sergeev, 1986: 185.
Acheta domesticus: Storozhenko, 2004: 199.

REMARKS. In North Eurasia, this species is the typical synanthrope associated with heated buildings and other constructions. This cricket was registered in cities and other settlements of Ulug-Khem Intermountain Basin (the central part of Tuva) at least from the end of the 1980s (Zaika, pers. comm.).

DISTRIBUTION. **Tuva**: UKH, KKH. – Europe, S Siberia, the southern part of the Russian Far East, Africa, SW Asia, the Caucasus, Kazakhstan, Turkmenistan, Pakistan, India, N America.

ECOLOGY. This species is widely distributed in many temperate and subtropical regions of the Northern Hemisphere, because it is the typical synanthrope associated with heated buildings and other similar constructions.

Genus *Modicogryllus* Chopard, 1961

21. ***Modicogryllus frontalis* (Fieber, 1845)**

Modicogryllus frontalis: Sergeev, 1985: 49.
Modicogryllus (Modicogryllus) frontalis: Storozhenko, 2004: 201.

REMARKS. This cricket was recorded from Tuva (Uvs-Nuur Basin, Tes River, 10 km upstream of river mouth) for the first time by Sergeev (1985).

DISTRIBUTION. **Tuva**: UVS. – S Europe, S Siberia, N Africa, Anatolia, the Caucasus, Iran. Kazakhstan, Middle Asia, Afghanistan, NW China, W Mongolia. It is also known from the Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzav, 1977).

ECOLOGY. Unknown. In the steppes of the southern part of W Siberia. the species prefers habitats occupied by halophytes. It populations are rare and abundance is low.

Subfamily Nemobiinae

Tribe Pteronemobiini

Genus *Dianemobius* Vickery, 1973

22. ***Dianemobius fascipes nigrofasciatus* (Matsumura, 1904)**

Pteronemobius fascipes: Stebaev, 1964: 615–616.
Dianemobius fascipes nigrofasciata: Benediktov, 1997: 117.
Dianemobius fascipes nigrofasciatus: Storozhenko, 2004: 221; Benediktov, 2006: 28; Benediktov & Storozhenko, 2018: 1483.

REMARKS. The species was mentioned from Tuva for the first time by Stebaev (1964). The only know locality was near the mouth of the Chaa-Khol River (the left tributary of the Ulug (or Upper Yenisei) River), 30 km W Shagonar City. There is an evident erratum in the original text (30 km E Shagonar City), because actually this river valley is to the west of Shagonar City (and the Shagonar River). Unfortunately, this point has been inundated by the Sayano-Shushenskoye Reservoir.

DISTRIBUTION. **Tuva**: UH (?). – S Siberia from the Altay Mts. and the vicinities of Novosibirsk (Sergeev, 1991, 2007; Benediktov, 2006) to Tuva, the southern part of the Far East, including S Kurile Islands, NE China, Korea, Japan. Probably the larvae of this species were recorded from W Siberia as *Pteronemobius* sp. by Bey-Bienko (1925).

ECOLOGY. According Stebaev (1964) the abundant population of this small cricket was observed in typical habitats: wet open plots of flood-plains with sand and stones between meadows and willows. The crickets actively sang during warm nights and cloudy days. No new populations of this small cricket were found in Tuva during last decades, despite some opportunities for the species to use anthropogenic habitats (in the southeastern part of W Siberia, the species often occurs in wet habitats with gravel, especially along roads).

CONCLUSION

The analysis of all applicable data concerning the long-horned orthopterans of Tuva shows that there are at least 22 species, namely 19 species of katydids (Tettigoniidae) and 3 species of crickets (Gryllidae). Six species are recorded from the

region for the first time: *Tettigonia cantans*, *Platycleis albopunctata*, *Platycleis affinis* (also new for the Asian part of Russia), *Roeseliana fedtschenkoi*, *Poecilimon intermedius*, *Acheta domesticus*. *Montana tomini* is also mentioned for the southern part of Krasnoyarsk Region for the first time. Besides, there are at least 6 species known from adjacent regions, such as the southern parts of the Republic of Khakassia and Krasnoyarsk Region and the Mongolian part of Uvs-Nuur Intermountain Basin. This means that several species, namely *Tettigonia caudata*, *Gampsocleis glabra*, *Roeseliana roeselii*, *Conocephalus dorsalis*, may be registered in the northern parts of Tuva, especially on forest opening and mountain meadows. *Eulithoxenus emeljanovi* can be found in the stony semi-deserts of Uvs-Nuur Intermountain Basin. *Conocephalus chinensis* may occur along the all coast of Uvs-Nuur and on the wet flood-plains and swamps in the lower part of the Tes River Valley.

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REFERENCES

Benediktov, A.A. 1997. Review of data concerning the Orthoptera fauna of Tuva. P. 117–120. *In*: *Sustainable development of minor indigenous peoples of Central Asia and the steppe ecosystems*, Slovo Publ., Kyzyl & Mosow. [In Russian]

Benediktov, A.A. 2006. The interesting findings of Orthoptera (Insects) species in South Siberia and limiting factors for their possible expansion. P. 28–29. *In*: *Entolomologicheskije Issledovaniya v Severnoj Asii.* Novosibirsk. [In Russian]

Benediktov, A.A. 2017. Additions and corrections to the cadastre of Orthoptera insects of Samarskaya Luka, on the basis of analysis of acoustic signals of males. *Nature Conservation Research*, 2(Suppl. 2): 1–8. [In Russian] DOI: https://doi.org/10.24189/ncr.2017.031.

Benediktov, A.A. & Storozhenko, S.Yu. 2018. Confirmation of the subspecies status of *Dianemobius fascipes nigrofasciatus* (Orthoptera, Gryllidae) based on bioacoustic and morphological data, with the description of the male sounds from Southern Siberia. *Zoologicheskij Zhournal*, 97(12): 1478–1484. [In Russian] DOI: https://doi.org/10.1134/S0044513418070048

Berezhkov, R.P. 1951. Grasshoppers of the Tuva Region. *Izvestiya Zapadno-Sibirskogo filiala AN SSSR. Seriya biologicheskaya*, 4(1): 17–23. [In Russian]
Bey-Bienko, G.Ja. 1925. Materials on the fauna of Orthoptera of Altai and adjacent countries. *Trudy Sibirskoi selsko-khozyaistvennoi Akademii*, 5: 37–56. [In Russian]
Bey-Bienko, G.Ja. 1928. Notes on Mantidae, Tettigoniidae and Gryllidae (Orthoptera) of the vicinity of Orenburg, S.E. Russia. *Entomologicheskoe Obozrenie*, 22(1–2): 124–128. [In Russian]
Broughton, W.B. 1955. Notes sur quelques caractères acoustiques de *Platycleis affinis* Fieber (Tettigoniidae). P. 203–247. *In*: Busnel, R.-G. (Ed.). *Collocue sur l'acoustique des Orthoptères. Annales des Épiphyties, fascicule spécial de 1954.*
Broughton, W.B. 1965. Song learning among grasshoppers? *New Scientist*, 27: 338–341.
Cherepanov, A.I. 1951. About geographical distribution of the katydids *Zichya deracanthoides* B.-Bienko and *Zichya baranovi* B.-Bienko in Tuva Region. *Entomologicheskoe Obozrenie*, 32: 206–207. [In Russian]
Childebaev, M.K. & Storozhenko, S.Yu. 2004. An annotated list of long-horned orthopterans (Orthoptera, Ensifera) of Kazakhstan. *Tethys Entomological Research,* 9: 213–228.
Chogsomzhav, L. 1972. Acridoidea and Tettigonioidea of the Mongolian People's Republic. *Nasekomje Mongolii*, 1: 151–198. [In Russian]
Chogsomzhav, L. 1974. Orthopteroidea of West and South Mongolia. *Nasekomje Mongolii*, 2: 23–33. [In Russian]
Chogsomzhav, L. 1977. Orthopteroidea of the Gobi Desert. *Nasekomje Mongolii*, 5: 151–198. [In Russian]
Chogsomzhav, L. 1989. Composition and distribution of fauna of the Orthopteroidea of the Mongolian People's Republic. *Nasekomje Mongolii*, 10: 84–96. [In Russian]
Gause, G.F. 1930. Studies on the ecology of the Orthoptera. *Ecology*, 11(2): 307–325.
Heller, K.-G. 1988. *Bioakustik der Europäischen Laubheuschrecken. Ökologie in Forschung und Anwendung*. Margraf Verlag, Weikersheim. 358 pp.
Ivanova, I.V. 1967. On the fauna of Orthoptera of the southern part of the Krasnojarsk Region, Central Siberia. *Entomologicheskoe Obozrenie*, 46(1): 127–138. [In Russian]
Ivanova, I.V. 1968. *Grasshoppers and other Orthoptera of the southern part of the Krasnojarsk Region*: *PhD Theses*. Leningrad, 16 p. [In Russian]
Ivković, S., Iorgu, I.S., Horvat, L., Chobanov, D., Korsunovskaya, O.S. & Heller, K.-G. 2017. New data on the bush-cricket *Montana medvedevi* (Orthoptera: Tettigoniidae), critically endangered in Europe (EU 28), and a comparison of its song with all known song patterns within the genus. *Zootaxa*, 4263(3): 527–542. DOI: https://doi.org/10.11646/zootaxa.4263.3.5
Kazakova, I.G. & Sergeev, M.G. 1993. Regularities of distribution of Orthoptera populations in natural and anthropogenic areas of mountain depressions in Southern Siberia. *Entomological Review*, 72(4): 70–80.
Korsunovskaya, O.S. 2016. On the distribution of the bush cricket *Platycleis albopunctata* Zeuner, 1941 (Orthoptera, Tettigoniidae) in the South of European Russia and in Uzbekistan. *Entomological Review*, 96(3): 301–308. DOI: https://doi.org/10.1134/S0013873816030064
Miram, E. 1907. Zur Orthopteren-Fauna Russlands. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, 49(6): 1–9.
Mistshenko, L.L. 1968. Orthopteroid insects (Orthopteroidea) collected by the entomological expedition of the Zoological Institute of Academy Sciences of USSR in the Mongolian People's Republic in 1967. *Entomologicheskoe Obozrenie*, 47(3): 482–498. [In Russian]

Nosin, V.A. 1963. *Soils of Tuva*. USSR AS Publ., Moscow. 431 pp. [In Russian]
Oliveira, P.A.P., Simoes, P.C. & Quartau, J.A. 2001. Calling songs of certain orthopteran species (Insecta, Orthoptera) in southern Portugal. *Animal Biodiversity and Conservation*, 24(1): 65–79.
Ragge, D.R. 1990. The songs of the western European bush-crickets of the genus *Platycleis* in relation to their taxonomy (Orthoptera: Tettigoniidae). *Bulletin of the British Museum (Natural History). Entomology*, 59: 1–35.
Ragge, D.R. & Reynolds, W.J. 1998. *The songs of the grasshoppers and crickets of Western Europe.* Harley Books in association with the Natural History Museum, Colchester, Essex. 591 pp.
Samways, M.J. 1976a. Song modification in the Orthoptera. Part I. Proclamation songs of *Platycleis* spp. (Tettigoniidae) . *Physiological Entomology*, 1: 131–149.
Samways, M.J. 1976b. Song modification in the Orthoptera. Part III. Microsyllabic echemes in *Platycleis* spp. (Tettigoniidae). *Physiological Entomology*, 1: 299–303.
Schmidt, G.H. & Schach, G. 1978. Biotopmäßige Verteilung, Vergesellschaftung und Stridulation der Saltatorien in der Umgebung des Neusiedlersees. *Zoologische Beiträge (Neue Folge)*, 24: 201–308.
Sergeev, M.G. 1982. New records of Orthoptera in Siberia and their possible zoogeographical consequence. Part. 1. P. 43–46. *In*: Zolotarenko, G.S. (Ed.). *Beneficial and Pest Insects of Siberia.* Nauka Publ., Novosibirsk. [In Russian]
Sergeev, M.G. 1985. New records of Orthoptera in Siberia and their possible zoogeographical consequence. Part. 2. P. 47–49. *In*: Zolotarenko, G.S. (Ed.). *Arthropods of Siberia and the Far East*. Nauka Publ., Novosibirsk. [In Russian]
Sergeev, M.G. 1986. *Distribution patterns of Orthoptera in North Asia.* Nauka Publ., Novosibirsk. 236 pp. [In Russian]
Sergeev, M.G. 1991. New records of Orthoptera in Siberia and their possible zoogeographical significance. *Entomological Review*, 70(4): 120–122.
Sergeev. M.G. 2007. Orthoptera. P. 94–104. *In*: Zhimulev, I.F. (Ed.). *Priroda Akademgorodka (50 let spustya)*. SB RAS Publ., Novosibirsk. [In Russian]
Sergeev, M.G. 2011. Distribution patterns of grasshoppers and their kin in the boreal zone. *Psyche*, 2011, Article ID 324130, 9 pages. DOI:10.1155/2011/324130
Sergeev, M.G. & Bugrov, A.G. 1988. The katydids of the subfamily Deracanthinae (Orthoptera, Bradyporidae) from the fauna of Siberia. P. 46–53. *In*: Zolotarenko, G.S. (Ed.) *Taxonomy of Animals of Siberia*. Nauka Publ., Novosibirsk. [In Russian]
Sergeev, M.G., Kopaneva L.M., Rubtsov I.A., Antipanova E.M., Bugrov, A.G. *et al.* 1995. *Siberian grasshopper (Aeropus sibiricus L.)*. Nauka Publ., Novosibirsk. 176 pp. [In Russian]
Sergeev, M.G. & Storozhenko, S.Yu. 2018. First record of *Montana tomini* (Pylnov, 1916) (Orthoptera: Tettigoniidae) from the Tyva Republic and the Republic of Buryatia. *Far Eastern Entomologist*, 365: 31–32. DOI: https://doi.org/10.25221/fee.365.3
Sevgili, H., Demirsoy, A.İ. & Durmuş, Y. 2011. Orthoptera and Mantodea fauna of Kazdağı (Ida) National Park with data on the calling songs of some bush-crickets. *Turkish Journal of Zoology*, 35(5): 631–652. DOI: https://doi.org/10.3906/zoo-0912-5
Stebaev, I.V. 1964. New data on the fauna of Orthoptera from the Tuva Autonomous Republic and their zoogeographical significance. *Entomologicheskoe Obozrenie*, 43(3), 614–621. [In Russian]
Stebaev, I.V. 1968. Chracteristics of above-ground and on-ground zoo-microbiological complexes of the steppe landscapes of West and Middle Siberia. *Zoologicheskij Zhournal*, 47(5): 661–675. [In Russian]

Stebaev, I.V. 1980. Physico-geographical barriers of distribution of Orthoptera and butterflies in the adjacent territories of Siberia and Kazakhstan. P. 3–17. *In*: Stebaev, I.V. (Ed.) *Problems of Ecology.* 6. Novosibirsk State University, Novosibirsk. [In Russian]

Stebaev, I.V., Pshentsyna, L.B. & Molodtsov, V.V. 2001. Spatial differentiation of trophic relationships of grasshoppers (Acrididae) and their inclusion in the biogeocoenotic processes of the steppe ecosystems in the cryo-arid regions of South Siberia. *Sibirskij Ekologicheskij Zhournal*. 8(1): 9–18. [In Russian]

Storozhenko, S.Yu. 2004. *Long-horned orthopterans (Orthoptera: Ensifera) of the Asiatic part of Russia.* Dalnauka, Vladivostok. 280 pp. [In Russian]

Storozhenko, S.Yu., Kim, T.W. & Jeon, M.J. 2015. *Monograph of Korean Orthoptera*. National Institute of Biological Resources, Incheon, 377 pp.

Vorontsovsky, P.A. 1911. Data on the insects' fauna of the vicinities of Orenburg. Katydids (Locustodea). *Izvestiya Orenburgskogo Otdela Russkogo Geographicheskogo Obstshestva,* 22: 55–60. [In Russian]

Zhantiev, R.D., Korsunovskaya, O.S. & Byzov, S.D. 1995. Acoustic communication of the desert katydids (Bradyporidae, Deracanthinae). *Zoologicheskij Zhournal*, 74(9): 58–72. [In Russian]